ART. XXXII.—DESCRIPTION OF AN AFRICAN BEETLE, ALLIED TO SCARABÆUS POLYPHEMUS, WITH REMARKS UPON SOME OTHER INSECTS OF THE SAME GROUP. By Thaddeus William Harris.

In the year 1781, the Danish naturalist Fabricius published the first description of a large African beetle, preserved in the cabinet of Sir Joseph Banks in London, and gave it the name of *Scarabæus Polyphemus*. Olivier afterwards found this insect in the same collection, and described and figured it, as a species of *Cetonia*, in 1789. The specimen was a male: it remained without a mate, and, according to Mr. Hope* and Mr. Macleay,† it was the only one known for many years, and was long considered as "the chief ornament of the Banksian cabinet," from which, however, it disappeared a few years ago. In the "Monographie des Cétoines" of Gory and Percheron, which was published at Paris in 1833, there appeared a description and figure of a male of the same species, which these authors state was contained in their own cabinet; but we have no authentic account of any other specimen in European collections.

Dr. Thomas S. Savage has lately brought from Cape Palmas, in Western Africa, several males and the female of this rare and noble species, together with both sexes of another, which is scarcely inferior to it in size and beauty, and, having put them into my hands, has requested me to describe them.

As we are indebted to Dr. Savage for the first discovery of the female of the *Polyphemus*, which was before unknown, it may be proper to offer for publication a description of this insect, with that of the new species which now enriches his admirable collection.

The Boston Society of Natural History has received from the same gentleman a large number of the fine insects of Western Africa, among which are males and females of *Scara-*

* Coleopterist's Manual, p. 60.

† Illustrations of the Annulosa of South Africa, p. 33.

bæus torquata and *micans* of Drury, together with both sexes of the gigantic beetle called *Goliathus Cacicus* by Gory and Percheron,* but differing from the true *Cacicus* of Voet, in having a triangular black patch on the shoulder of each elytron. The cabinet of the Essex County Natural History Society, at Salem, contains these same species, together with a male and female of *Goliathus* or *Hegemon Drurii*, and other valuable insects, mostly brought, by Mr. George A. Perkins from Western Africa.

The writer of this article has enjoyed the rare opportunity of seeing all the Goliath beetles in these cabinets, as well as those in the private collections of Dr. Savage and Mr. Perkins. On this account, and not from any ambition to connect his own name with the description of a new foreign species, he has been induced to yield to the request of Dr. Savage in drawing up the characters of the *Polyphemus* and of the new species allied to it, and has ventured to prefix to them some observations on the remarkable group to which these insects belong.

Lamarck instituted the genus *Goliath*, or *Goliathus*, as it is now generally denominated, in the year 1801, for the reception of *Scarabæus Goliatus*, *Cacicus*, *Polyphemus*, and some other species.

Most of the insects included in this genus are large, and some of them are of gigantic proportions, and are much prized for their beauty and extreme rarity. The clypeus of the males is generally forked or armed with horns. The mentum is wide, deeply notched, and divided into lobes, and the origin of the labial palpi is concealed within a deep sinuated furrow in the outer edge of each lateral lobe. In the African species, the maxillæ are horny, and are furnished with teeth and a terminal brush or pencil of hairs; the mandibles end with a thin and horny lobe; the epimera or frusta are more or less conspicuous between the outer angles of the thorax and the shoulders of the elytra, and the latter are dilated and promi-

* It is surprising that these authors and subsequent writers have not noticed the difference between Voet's species and this insect.

nent; the mesosternum is wide, thick, and subacute, but is not much produced anteriorly; and supplementary claws and claw-joints (pseudonychia and plantulæ) are found between the nails of all the feet.

Mr. Macleay, in the "Illustrations of the Annulosa of South Africa," has referred some of the species to his genus *Coryphe* (*Gnathocera* of Gory and Percheron), and has distributed the others into several sections; and Mr. Hope* has reduced them to smaller groups, which may be called subgenera.

In a paper upon some of these African beetles, which was published in June 1839, in the "Journal of the Essex County Natural History Society," the name of *Hegemon* was proposed for the subgenus including the princely *Scarabæus Goliatus*† of Linnæus, together with the still more magnificent *Goliathus Drurii* of Westwood, and the *Cacicus* of Gory and Percheron, and also the females of the two latter, bearing the titles of *regius*‡ and *princeps*.§ Should this generical name be adopted, it will enable us to restore to the Linnæan species the specific name of which Lamarck and other naturalists have deprived it.

The subgenus *Hegemon* may be distinguished by the following characters. Clypeus of the male armed in the middle of its anterior edge with a short, recurved, forked horn, the diverging branches of which are broad, thin, and obtuse; and on each side of the head, above the antennæ, a broad and thin toothlike projection, truncated at the summit. Labrum wide, thin but horny, entire or rounded before, and entirely concealed. Mentum widest before the middle, divided into four lobes by a rounded emargination of the an-

* "Coleopterist's Manual," p. 116.

† Linnæus and Drury did not use the letter *h* in this name. It is to be regretted that Mr. Macleay, who is justly styled the prince of modern entomologists, has interchanged the names of this and the following species, in his "Illustrations," giving to the *Goliatus* the name of *Drurii*, and to the latter that of *Goliathus*. By consulting Mr. Westwood's valuable edition of Drury's "Illustrations of Exotic Entomology," he would have avoided this mistake.

‡ Described by Professor Klug in Erman's "Reise."

§ Described by Mr. Hope in the "Manual."

terior edge, and a deep sinus of the margin on each side, within which the labial palpi are inserted and nearly concealed. Maxillæ horny, the inner lobe very hairy, and armed at the tip with a small tooth; the terminal lobe not articulated at right angles with the base, but curved inwards beyond the middle, where it is armed with a sharp tooth, and tapering at the end, which is furnished externally with a long and thick pencil of tawny hairs.* Thorax orbicular or rounded behind; in the females indented before the middle, and elevated into a tubercle on the anterior edge. Epimera large and conspicuous above, between the outer angles of the thorax and the shoulders of the elytra. Body robust; back convex; elytra gibbous behind. Abdomen not indented or furrowed beneath, in either sex; the extremity densely fringed with hairs, and immaculate. Forelegs of the males elongated; anterior tibiæ unarmed, but covered with minute asperities on the inner side, and furnished with a downy pad beneath the base; three-toothed externally in the females. Claw-joints and claws of the forefeet very strong and robust in the males. Four posterior tibiæ fringed internally with hairs in both sexes, and armed with a spine on the middle of the outer edge in the females.

The subgenera, named *Dicronorhina* and *Mecynorhina* by Mr. Hope, are found in Western Africa. They differ from the foregoing in the form of the thorax, which is trapezoidal, or broad behind and narrowed before; moreover, the body is not so robust and convex; the shoulders of the elytra are not so prominent; and the epimera are not so large and conspicuous as in the subgenus *Hegemon*. In the males, the clypeus is horned, the forelegs are the longest, and always differ from those of the other sex, the claw-joints and claws of the forefeet are very strong and robust, and the middle of the abdomen is concave or furrowed beneath.

Scarabæus micans of Drury, *Goliathus splendens* and *Smithii*

* The trophi are correctly figured in Mr. Hope's "Manual," plate III., excepting the maxillæ, in which the articulation of the terminal lobe with the base is not shown.

of Macleay, *G. Grallii* and *Daphnis* of Buquet, *Cetonia quadrimaculata* of Olivier, and some other species, belong to the genus *Dicronorhina*. These splendid beetles are highly polished, and have almost the lustre of glass. In the males, the anterior edge of the square clypeus is produced, and ends with a short recurved horn, which is bifid, or suddenly dilated at the summit, in the form of the letter T; the top of the head is concave, with a sharp semicircular ridge overhanging the middle; the lateral angles of the clypeus are prominent, and more or less elevated. The mesosternum is longer and more acute than in *Hegemon* and *Mecynorhina*. The hindmost tibiæ, alone, are slightly fringed with hairs on the inner side of the base. The anterior and intermediate tibiæ are not toothed or spined externally, in the males, and the former have several very small denticulations, which are often obsolete, on the inner side. The forelegs of the female are three toothed externally, and the four hinder tibiæ are armed with a single spine on the middle of the outer edge. The extremity of the abdomen is immaculate. By these characters alone this subgenus may be distinguished easily from the following one, and it approaches more nearly to the genus *Coryphe* of Macleay.

Scarabæus Polyphemus is the type of *Mecynorhina*, which will also include the new West African species discovered by Dr. Savage. The *torquata** of Drury, the male of which was first described and figured by Mr. Waterhouse,† in the year 1838, should be referred to the same subgenus. The opaque and velvety substance, that covers the thorax and elytra, the two whitish spots on the extremity (podex or pygidium) of the abdomen, with the long-horned clypeus of the males, give a peculiar aspect to these large and beautiful beetles.

The head is quadrate, and more or less concave above, the semicircular concavity extending backwards to the edge of the thorax, in the males. In this sex the anterior margin of

* This is Drury's orthography; the name is usually written *torquatus* by other entomologists.

† In Charlesworth's "Magazine of Natural History," Vol. II. p. 635.

the clypeus is produced in the form of a very long horn, and the elevated ridges on each side, above the antennæ, are also more or less produced and hornlike. Body more convex than in *Dicronorhina*, opaque and velvety above, and more or less covered with the same opaque substance on the breast. Thorax narrowed before and broad behind, with three shallow emarginations on the hinder edge. Scutel triangular. Elytra gibbous behind, and terminating in a spine at the sutural angle. Middle of the abdomen concave in the males. Podex marked with two large whitish square spots, and fringed with tawny hairs. Mandibles concealed, and ending with a thin horny lobe. Maxillæ horny, exposed at base only; the inner lobe very hairy, and armed with a minute tooth at the extremity; the terminal lobe slender and acute, not toothed in the middle, bearing on its outer side a thick brush of tawny hairs, and articulated to the back of the maxillæ nearly at a right angle. Mentum broadest behind the middle, four-lobed anteriorly; the middle lobes separated by an angular notch; the lateral lobes, as in the genus *Hegemon*, less prominent, and separated from those between them by a deep sinus in the margin on each side, designed for the reception of the palpi. Anterior tibiæ three-toothed externally; the teeth very irregular and unequal in the males, and in this sex the inner side of these tibiæ is armed with three or more teeth also. There are two spines on the middle of the intermediate tibiæ and one spine on the posterior tibiæ, in the females; but these spines are generally obsolete or wanting in the males. The hindmost tibiæ alone are fringed with hairs, but the fringe extends along the whole of the inner edge.

1. MECYNORHINA POLYPHEMUS.

Opaque velvet-green above; top of the head, five longitudinal stripes on the thorax, three rows of rounded spots on each elytron, a spot on the scutel, two large square spots on the podex, and the sides of the breast, pale buff-colored; margin of the clypeus, horns, antennæ, and tarsi black.

Male. Head three-horned; the anterior horn curved up-

wards, forked and denticulated at the end; the lateral horns elevated perpendicularly, compressed and denticulated. Intermediate stripe on the thorax abbreviated behind. Anterior femora six-toothed internally, and notched at the base. Body beneath, except the sternum and abdomen, covered with a yellowish velvet-like pile. Length, exclusive of the horns, $2\frac{1}{4}$ inches; central horn $\frac{3}{4}$ inch, or more.

Female. Clypeus narrowed before, and widely emarginated on the anterior edge. Thorax grossly punctured; the intermediate vitta obsolete. Body beneath entirely green, polished, grossly punctured, and scantily clothed with tawny hairs. Length $2\frac{1}{8}$ inches. (Pl. xxi. figs. 5–11.)

2. MECYNORHINA. SAVAGII.

Thorax opaque velvet-green above, with five broad yellowish stripes; scutel green, with a broad yellowish stripe in the middle; elytra velvet-black, with three rows of tawny spots on each elytron, and an indented stripe of the same color on the suture, the marginal and subsutural spots confluent from the base to the middle; head of the male and central horn above, two spots on the vertex of the female, two square spots on the podex, and sides of the breast, yellowish gray; sternum, abdomen, and legs, dark green and polished; horns and margin of the clypeus, anterior and intermediate tarsi, black; posterior tarsi pale rufous, with the articulations and claws black.

Male. Head three-horned; the anterior horn horizontally extended, and forked at the end; lateral horns smooth and tapering, extended forwards and outwards; anterior femora with three unequal robust teeth on each side, those on the outer edge abruptly bent downwards. Length, nearly 2 inches; horn more than $\frac{1}{2}$ inch.

Female. Clypeus quadrate, truncated before; sides of the breast covered with a yellowish gray substance, intermixed with coarse hairs. Length $1\frac{3}{4}$ inch. (Pl. xxi. figs. 1–4.)

It is possible that the species belonging to Sir William J. Hooker, and referred to by Mr. Hope and Mr. Macleay, may be identical with *M. Savagii.*

Dr. Savage informs me, that these two species of *Mecynorhina* feed upon a vine that climbs upon very lofty trees, and states that "they wound the bark of the vine and extract the juice. The vine is full of a fluid as tasteless and limpid as water; and the natives, when travelling in the woods, cut it off and drink the juice, when no water can be easily obtained." He collected two females of each of these species, and several males.

From his interesting manuscript notes it appears that the *Goliathi* of Western Africa inhabit various trees, and that different species have a predilection for different kinds of trees. In a letter to Mr. Hope, published by Mr. Westwood, in his Arcana Entomologica, Dr. S. says, "As to *Goliathus Cacicus*, these regions abound with them; and, after a year's watching, I have obtained the flower, and know, botanically, the tree from which they derive their food. It is a syngenesious plant, belonging to Jussieu's Compositæ Corymbiferæ. The *Cacicus* inhabits no other tree, as it is said. The *Mecynorhina torquata* inhabits two kinds of trees, one a magnificent Mimosa, a Goliath of its kind; I have not yet obtained the blossom, it is now in seed, which I have. The *Goliathus Drurii* is not found in the locality of Cape Palmas; it has been taken at Bassa, near Montserado, and at Cape Coast. I lately saw Professor Klug's *regius*, which is no more nor less than the female of *Drurii*. Of this I am as certain as that the *princeps* of Hope is the female of *Cacicus*. The *Gold* Coast would seem to be the locality of *Drurii*, and the *Grain* Coast of that of the *torquatus* and *Cacicus*."*

The males are much more numerous than the females. The black-shouldered *Cacicus* abounds on the Grain and Ivory Coasts, and many specimens have been procured at Cape Palmas. When in good condition, the black patch is always more or less conspicuous on the shoulder of each elytron in this species, and is never replaced by the pearly white

* This extract was furnished by Dr. Savage himself; who has informed me, since this article was sent to press, that Mr. Westwood's "Arcana" contains a figure of the female *Polyphemus*, with an account of all the known *Goliathi*. Unfortunately the information came too late to be of any use at this time.

color which appears on that part in Voet's figure and description. Hence it still remains uncertain whether Voet's *Cacicus ingens* be a distinct species, or merely an accidental variety of the black-shouldered species. The latter inhabits a tree that grows to the height of thirty or forty feet, with a diameter of six or eight inches, and can be taken in great numbers during the months of December, January, and February, when the tree renews its blossoms and leaves. The insects are roasted and eaten by the natives, who say "they are very fat and sweet." Dr. Savage thinks that the Gold Coast, or rather the interior of Guinea, will be found to be the proper locality for *Hegemon Drurii*. It is probable that *Hegemon Goliatus* may be obtained nearer the line, and particularly back of the Gaboon. *Mecynorhina torquata* is found at Cape Palmas, where many have been obtained within a few years. The tree upon which they live is supposed to be a species of Acacia by Dr. Savage. *Dicronorhina micans* has been taken at Cape Palmas also, but seems to be rare on that part of the coast.

It appears, from the observations of Dr. Savage, that the food of the Goliath beetles is fluid, like that of the *Trichii* and *Cetoniæ*, insects belonging to the same natural family; but the latter live chiefly on the nectar of flowers, and the former on the sap of plants. The long brushes on their jaws, and the diverging rows of hairs that line their lower lips, are admirably fitted for absorbing liquid food; while their horny teeth afford these beetles additional means for obtaining it, from the leaves and juicy stems of plants, when the blossoms have disappeared. Thus every new discovery in natural history, even when least expected, serves to increase the evidence of skilful contrivance and perfect adaptation of structure in all organized beings.

DESCRIPTION OF THE FIGURES ON PLATE XXI.

1. Mecynorhina Savagii, ♂.
2. Head of the same, in profile.
3. Clypeus of the female.
4. Anterior tibia of the same.
5. Head of M. Polyphemus, ♂, in profile.
6. The same, seen from above.
7. The same, seen from behind.
8. Anterior tibia of M. Polyphemus, ♂.
9. Clypeus of the female.
10. Maxilla; and,
11. Mentum, of the male, enlarged.